

REMARKS

This paper is being provided in response to the Office Action dated July 27, 2010, for the above-referenced application. In this response, Applicant has cancelled claim 28 (claims 2, 3, 13-24, 26, 27 and 30 having been previously cancelled) without prejudice or disclaimer of the subject matter thereof and have amended claims 1, 6, 7 and 25 to clarify that which Applicant considers to be the presently-claimed invention. Applicant respectfully submits that the amendments to the claims are fully supported by the originally-filed specification, consistent with the discussion herein.

Applicant notes that claims 4, 5 and 8-12 have been maintained in the application in withdrawn status and submits that upon allowance of a base generic claim, these claims should be rejoined to the application and also allowed as provided under MPEP 821.04 and 37 C.F.R. 1.141.

The rejection of claims 1, 6-7, 25 and 28 [and 29] under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter "Applicant's APA") in view of U.S. Patent No. 6,188,395 to Yatabe (hereinafter "Yatabe") by is hereby traversed and reconsideration is respectfully requested. Although not included in the statement of the rejection on page 2 of the Office Action, it is believed that claim 29 is included in the rejection because it is discussed in the detailed analysis portion of the Office Action.

Independent claim 1, as amended herein, recites a current-drive apparatus for a display panel. A plurality of current-drive circuits are included, each of said plurality of current-drive

circuits including first and second terminals, a reference resistor connected between said first and second terminals and a reference current generation circuit to produce at least one internal reference current responding to a voltage generated based on the reference resistor. A current source and said plurality of current-drive circuits are connected such that a current flowing through said current source becomes substantially equal to a current flowing through said reference resistor of each of said current-drive circuits, wherein a current flowing through said reference resistor in a first one of said current-drive circuits flows through said reference resistor in a second one of said current-drive circuits, and wherein said current drive circuits are coupled in series in a manner that said first terminal of a preceding one of said current drive circuits is connected to the second terminal of a succeeding one of said current-drive circuits which is adjacent to the preceding one of said current-drive circuits. At least one of said plurality of current-drive circuits further includes: a first reference MOS transistor; a first operational amplifier having a first input coupled to a first node between said first terminal and said reference resistor and a second input coupled to an output thereof; a second operational amplifier having a first input coupled to a second node between said second terminal and said reference resistor, a second input coupled to a drain of said first reference MOS transistor, and an output coupled to a gate of said first reference MOS transistor; and a current adjustment resistor connected between the drain of said first reference MOS transistor and the output of said first operational amplifier, wherein said current adjustment resistor operates such that a reference voltage generated based on a voltage at both ends of said reference resistor is applied across said current adjustment resistor to generate an internal reference current. Claims 4-12 and 29 depend directly or indirectly from independent claim 1.

Independent claim 25, as amended herein, recites a current-drive system for a display panel including first and second power source lines. A plurality of current-drive ICs are included, each of said plurality of current-drive ICs having first and second terminals and having a first resistor connected between said first and second terminals. A current source is connected to said plurality of current-drive ICs so that said ICs and said current source are connected in cascade with said first and second terminals between first and second power source lines, wherein said ICs are coupled in series between said first power source line and said current source in such a manner that the second terminal of a preceding one of said ICs is connected to the first terminal of a succeeding one of said ICs. At least one of said plurality of current-drive ICs further includes: a reference MOS transistor; a first operational amplifier having a first input coupled to a first node between said first terminal and said reference resistor and a second input coupled to an output thereof; a second operational amplifier having a first input coupled to a second node between said second terminal and said reference resistor, a second input coupled to a drain of said reference MOS transistor and an output coupled to a gate of said reference MOS transistor; a second resistor connected between the drain of said reference MOS transistor and the output of said first operational amplifier.

Applicant's APA is cited as disclosing a current-drive apparatus for a display panel comprising a plurality of current-drive circuits (citing to Fig. 1, section for 2a and 2b of Applicant's specification) and in which each of the plurality of current-drive circuits include first (citing to Fig. 1, terminal at VDD and R1) and second terminals (citing to Fig. 1, Terminal A). The Office Action states that that the AAPA does not teach a reference resistor connected between the first and second terminals and a reference current generation circuit to produce at

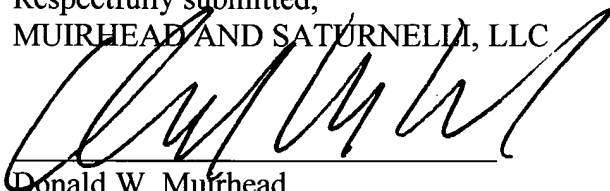
least one internal reference current responding to a voltage generated based on the reference resistor.

Yatabe discloses a power source circuit, a power source for driving a liquid crystal display and a liquid crystal display device. The Office Action cites to Yatabe as disclosing that a reference resistor of a current-drive circuit located on the side of a high voltage supply is connected to the high voltage supply through a voltage adjustment resistor and a reference resistor of a current-drive circuit located on the side of a low voltage supply is connected to the current source, citing to Fig. 1 (R1-R5) and col. 7, lines 1-67 and col. 12, lines 15-20 of Yatabe.

Applicant has amended the independent claims to recite features concerning at least of the current-drive circuits as including two operational amplifiers and a reference MOS transistor which is connected between the outputs thereof. Applicant submits that the amended claims are patentable over the cited prior art since the features of the reference MOS transistor, operational amplifiers and current adjustment resistor, configured as recited, are not disclosed by taught by the cited prior art references.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

Respectfully submitted,
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Date: November 22, 2010

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